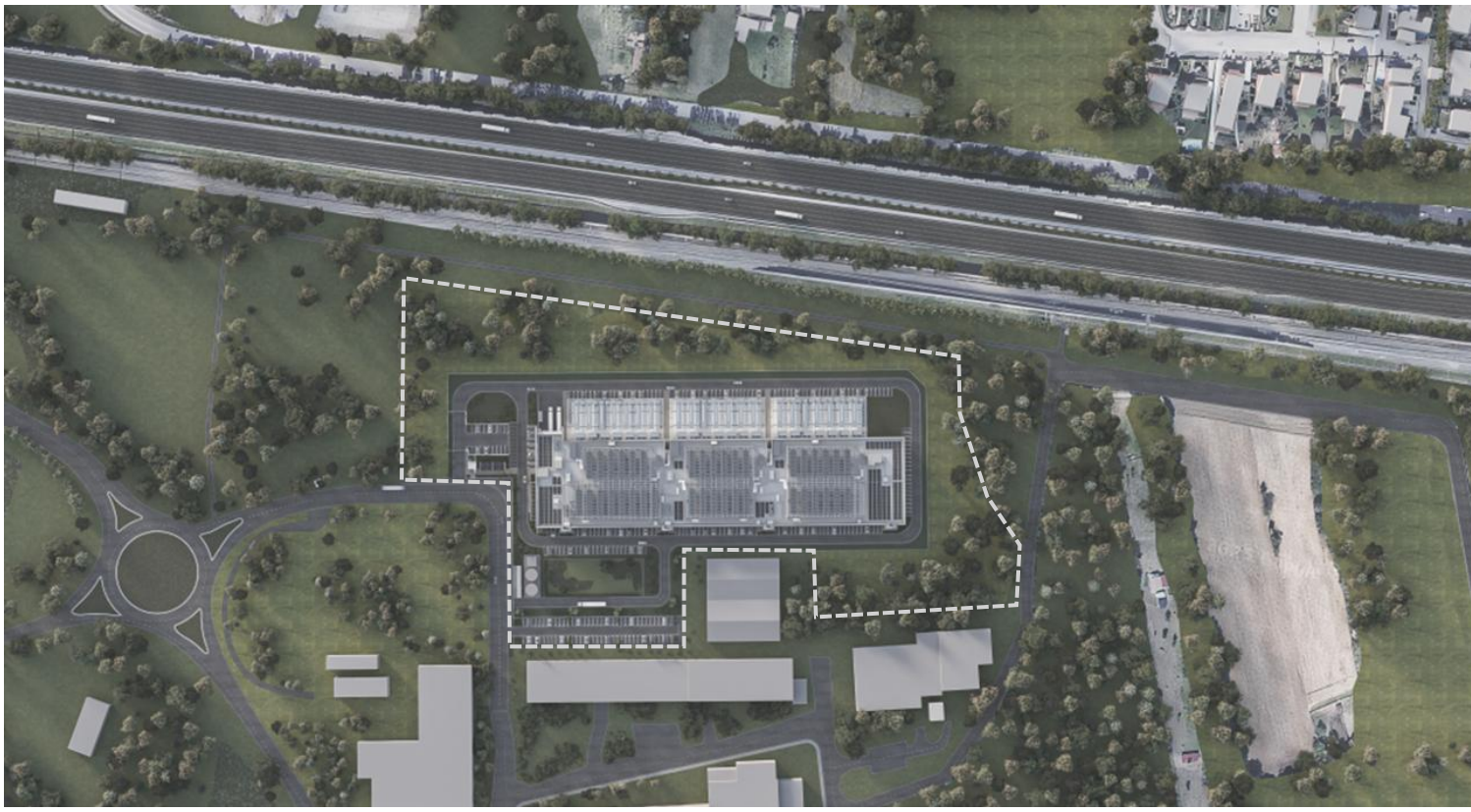
HSMXP1 – Campus Sedriano

Progetto per un nuovo Data Center in via Luigi Galvani a Sedriano, MI, Italy



HSMXP1SDR_SIA23

TITOLO DEL DOCUMENTO:

Relazione di calcolo PUE

PROCEDURA:

Valutazione di impatto ambientale per l'installazione di gruppi elettrogeni di emergenza con potenza maggiore di 150 MWt

D.Lgs 152/2006, Titolo III.

D.Lgs 152/2006, art. 2, Allegato II, alla parte seconda – progetti di competenza statale.

DATA:

8 Maggio 2026

NOME FILE:

HSMXP1SDR_SIA23_Relazione di calcolo PUE.pdf

AUTORE:

Lombardini22

FIRMA DIGITALE:

Ing. Roberto Cereda

Iscritto all' Ordine Degli Ingegneri di Brescia al n. 2609

PROGETTO:	HS MXP1 SDR
INDIRIZZO:	Via Luigi Galvani S/N, Sedriano, MI, Italy
TITOLO DOCUMENTO:	Relazione di calcolo PUE
DESCRIZIONE	Relazione di calcolo PUE
IDENTIFICATORE:	HSMXP1SDR_SIA23_Relazione di calcolo PUE
AUTORE:	Ing. Roberto Cereda
DATA:	08/05/2026
REVISIONE:	REV.00
CARTELLA VIA:	

PROPONENTE:	**MINERVA ITALY DC SPV S.R.L.**
PROPRIETÀ DELLE AREE:	**MINERVA ITALY DC SPV S.R.L.**
SVILUPPATORE:	**HSCALE**

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Client	Hscale
Project No.	P10538
Date	06.02.2026
Revision	P01
Reference	MXP1-BWE-XX-XX-CA-E-600002

Hscale

MXP1

PUE CALCULATION

Summary			
PROJECT TITLE	MXP1 (48 MW)		
PROJECT NUMBER	P10538	DATE	06-Feb-26
PURPOSE OF ISSUE	Stage 3	REV	P01

Annual Power Consumption Summary

Annual Power consumed (kWh)

Equipment Description	25%	50%	75%	100%
ACC abs power at N+3	12232151	24464303	36696454	48928606
Frost protection heating (kWh) at N+3	722085	618930	515775	412620
Data Hall FWU, N + 2	1520877	4016264	8144038	14544310
Data Hall CDU, N + 2	1441315	3662042	7188349	12532196
MMR, CRAH N + 1	340067	352771	365788	379121
Electrical room cooling, N + 1	11572	123178	614871	1311422
Reserve substation, N + 1	1537	15699	77096	163834
CHW pump power, N + 1	841080	1962521	3364322	4934339
Mechanical UPS losses	31961	74576	127844	187505
STS Losses	1229904	1766016	2396736	3153600
IT UPS losses	3784320	6727680	10406880	15557760
HVAC cooling components	6939672	6939672	6939672	6939672
General lighting & small power	2751851	2751851	2751851	2751851
Office areas	2097462	2097462	2097462	2097462
MV / LV Transformer Losses	236412	850601	2263169	4916244
Total	34182265	56423565	83950306	118810540
aPUE	**1.3252**	**1.2684**	**1.2662**	**1.2826**

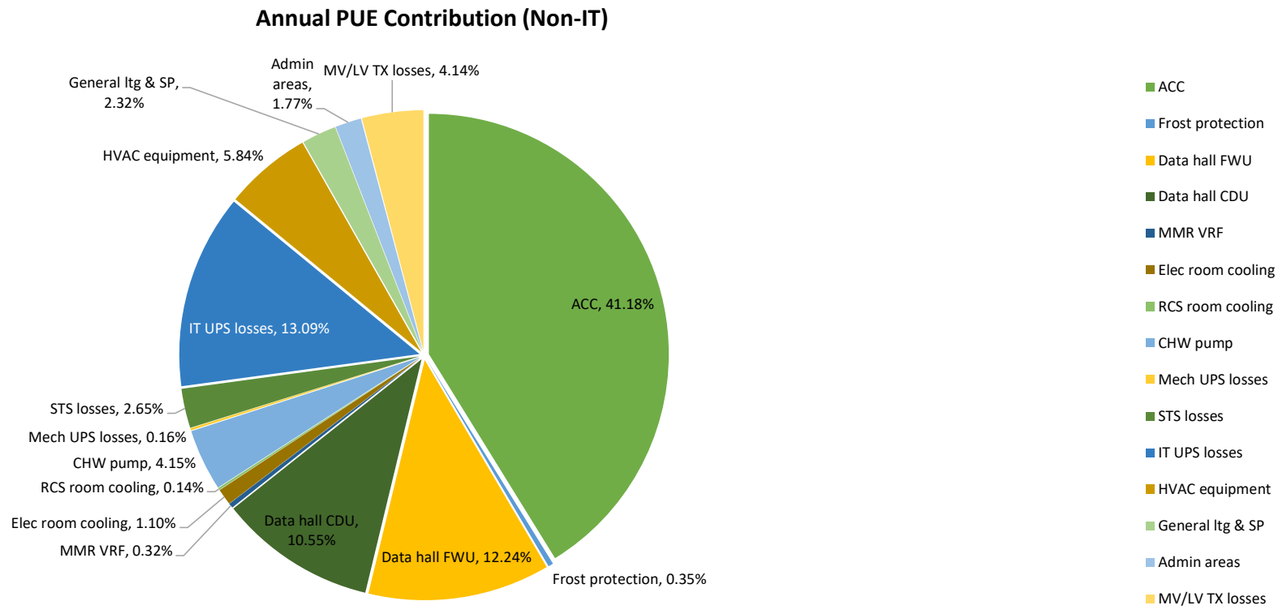

Figure 1: Annual PUE breakdown (non IT loads)

Assumptions:

1. The PUE calculation is based on the assumption of constant IT, i.e. no fluctuation throughout the year.
2. The calculation is on the assumption of normal operation conditions (i.e. no failures) for the entire annual period.
3. On the basis of Note 2, charging current of the UPS has been omitted.
4. Load relating to critical load only has been considered for the PUE calculation, including the following:
   a. UPS Losses
   b. Critical chilled water infrastructure relating to the data halls, switchrooms and MMR rooms only.
   c. Associated services for the operation of the critical load: general lighting and power to critical areas and controls load.
   d. Datahall pressurisation.
   e. Generator Loads.
   f. Physical Security.
5. Annual hourly data is based on the ASHRAE International Weather data for Energy Calculations (IWEC2) weather files.
6. PUE Calculations are based on pre-construction and procurement level of information.
7. PUE calculations are based on generic equipment selections are do not represent final procured equipment.
8. PUE calculation is based on industry general standard operating procedures.
9. Design is based on 48MW of IT capacity, with no tape store.
10. Design is based on IT room delta T of 13.9°C (air).
11. Heat export and reduced operations of heat rejection plant is not included and has been considered separate from this PUE calculation.

Summary			
PROJECT TITLE	MXP1 (48 MW)		
PROJECT NUMBER	P10538	DATE	06-Feb-26
PURPOSE OF ISSUE	Stage 3	REV	P01

Peak Power Consumption Summary

Peak power consumed (kW)

Equipment Description	Peak IT load
ACC abs power at N+3	16088
Data Hall FWU, N + 2	1660
Data Hall CDU, N + 2	1431
MMR, CRAH N + 1	43
Electrical room cooling, N + 1	150
Reserve substation, N + 1	19
CHW pump power, N + 1	563
Mechanical UPS losses	21
STS Losses	360
IT UPS losses	1776
HVAC cooling components	792
General lighting & small power	131
Office areas	239
Transformers	955
Total	24228
pPUE	**1.5048**

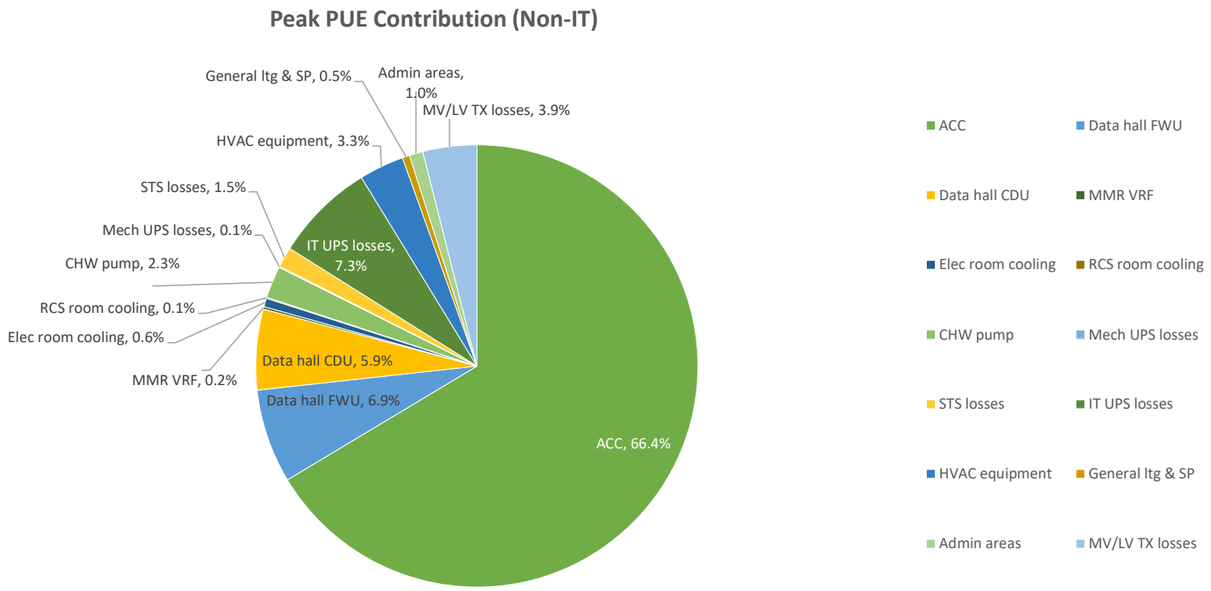

Figure 2: Peak PUE breakdown (non IT loads)

Assumptions:

1. The PUE calculation is based on the assumption of constant IT, i.e. no fluctuation during the peak hour.
2. The calculation is on the assumption of normal operation conditions (i.e. no failures or planned maintenance).
3. On the basis of the above note, charging current of the UPS has been omitted.
4. Load relating to critical load only has been considered for the PUE calculation, including the following:
   a. UPS Losses
   b. Critical chilled water infrastructure relating to the data halls, switchrooms and MMR rooms only.
   c. Associated services for the operation of the critical load: general lighting and power to critical areas and controls load.
   d. Datahall pressurisation.
   e. Generator Loads.
   f. Physical Security.
5. Peak PUE is based on an ambient temperature of the ASHRAE 2021 n=20 years for the relevant ASHRAE Weather Station.
6. PUE Calculations are based on pre-construction and procurement level of information.
7. PUE calculations are based on generic equipment selections and do not represent final procured equipment.
8. PUE calculation is based on industry general standard operating procedures.
9. Design is based on 48MW of IT capacity, with no tape store.
10. Design is based on IT room delta T of 13.9 °C (air).
11. Heat export and reduced operations of heat rejection plant is not included and shall be considered.

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